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THE MATHEMATICS TEACHER

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VOLUME I JUNE, 1909 NUMBER 4

THE TEACHING OF MATHEMATICS IN THE ELEMENTARY AND THE SECONDARY SCHOOL.*

BY ARTHUR SULLIVAN GALE.

(*Continued from p. 119.*)

The chapter on geometry (pp. 257–291) is excellent. It presents ideas on geometric analysis, concrete and formal geometry, methods for treating problems, modern geometry, and non-Euclidean geometry. Especially important is the discussion of problems which lead to algebraic equations and the construction of simple algebraic expressions. A timely plea is made for experimental work and the use of models and apparatus. As an example of their value, a Rochester teacher exhibited a sextant before a class one morning. A pupil borrowed it for the noon hour and became so enthusiastic in its use that he "cut" his afternoon classes to do some rough surveying. Contrast the interest which the instrument developed with the lack of enthusiasm which causes so many absences from the mathematical class-room! The chapter closes with an analysis of trigonometry and suggestions as to where its various parts should be taught.

The chapter on algebra (pp. 292–326) practically begins with a discussion of the tendencies of the day based on the report of the committee appointed by the American Mathematical Society in 1902, and closes with a topical outline of an order of treatment in accordance with the ideas developed in the chapter.

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* By J. W. A. Young. Longmans, Green and Co., 1907.

Much attention is given to the arithmetical side of algebra and to the interpretation of equations, a topic deserving more attention than it usually receives. The equation is discussed under the suggestive heading of "The back-bone of algebra" and many important points are well treated, especially the introduction of logarithms. A few points, of which we mention two, are open to criticism. To the reader who does not know how to solve a system of linearly dependent, non-homogeneous, linear equations, it is not enough to say of a system of inconsistent equations, used illustratively, that it "admits of no solution, as may be verified by attempting to solve it" (p. 305). Nor is this satisfactory: "Five is simply a number; it may be used as addend, subtrahend, multiplier, divisor or otherwise; + 5 is a number to be added; — 5 is a number to be subtracted" (p. 317).

The volume closes with a chapter on limits (pp. 327–346) including a discussion of irrational numbers and infinity. By means of an outline of a rigorous treatment, the difficulties of such a treatment are made very clear. The opinion that the theory of limits should be eliminated from secondary instruction seems to be rapidly becoming more prevalent.

The book is of great bibliographic value. Nearly every chapter is headed by an extensive list of texts and papers, while the pages themselves are exceptionally rich in foot-notes containing exceedingly interesting quotations, with references from a very wide range of authors. It is evident from the preface and also here and there throughout the book that other references might have been cited in various connections. The most noteworthy omission is that of the admirable volume edited by F. Enriques, Questioni riguardanti la geometria elementare, of which Teubner has published a much enriched translation into German. The value of Professor Young's book for reference is enhanced by a table of contents giving a complete analysis of each chapter by topics and sub-topics, and by a good index.

The book deserves a very wide circulation among teachers of mathematics, and will undoubtedly be a source of information and inspiration to the large number of teachers who are looking for the means to better their instruction.

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